

**WHAT IS CLAIMED IS:**

- 1           1.     A catalyzer, comprising:  
2                     a plurality of plane sheets arranged superposed and spaced apart  
3     from each other in a stack, each two successive plane sheets defining a channel  
4     that extends parallel to a flow direction, said channel being delimited by the plane  
5     sheets; and  
6                     a catalytic coating disposed on a predetermined section of each  
7     plane sheet and defining a coated section, the coated section positioned opposite to  
8     an uncoated section of the plane sheet,  
9             wherein at least a portion of a heat radiation emitted from the catalytic  
10    coating is absorbed by the uncoated section of the plane sheet.
- 1           2.     The catalyzer as claimed in claim 1, further comprising:  
2                     a corrugated sheet having a plurality of ridges and grooves disposed  
3     within the channel, the ridges connected to the plane sheets of the channel and the  
4     grooves substantially parallel to the flow direction.
- 1           3.     The catalyzer as claimed in claim 2, wherein the corrugated sheet  
2     is uncoated with a catalytic coating.
- 1           4.     The catalyzer as claimed in claim 2, further comprising a catalytic  
2     coating disposed on at least a portion of the corrugated sheet, the portion defining  
3     a coated section of the corrugated sheet.
- 1           5.     The catalyzer as claimed in claim 1, wherein the uncoated section of  
2     the plane sheet is provided with a material for absorbing at least a portion of the  
3     heat radiated from the catalytic coating or for promoting a recombination reaction  
4     of at least one radical.

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1           6.     The catalyzer as claimed in claim 2, wherein the uncoated section  
2 of the corrugated sheet is provided with a material for absorbing at least a portion  
3 of the heat radiated from the catalytic coating or for promoting a recombination  
4 reaction of at least one radical.

1           7.     The catalyzer as claimed in claim 2, wherein the corrugated sheet  
2 has a thickness less than a thickness of the plane sheet.

1           8.     The catalyzer as claimed in claim 2, wherein a thickness of the  
2 plane sheet and a thickness of the corrugated sheet is approximately equal.

1           9.     The catalyzer as claimed in claim 2, wherein the corrugated sheet  
2 has a thickness of less than 0.1 mm.

1           10.    The catalyzer as claimed in claim 9, wherein the thickness is about  
2 0.05 mm.

1           11.    The catalyzer as claimed in claim 1, wherein each plane sheet is  
2 uncoated at an inlet and at an outlet of the catalyzer.

1           12.    The catalyzer as claimed in claim 11, wherein the uncoated surface  
2 of the plane sheet has a length in the flow direction of approximately 2 to 5 mm at  
3 the inlet and a length in the flow direction of approximately 10 to 15 mm at the  
4 outlet.

1           13.    The catalyzer as claimed in claim 1, wherein a cross-section of each  
2 channel is essentially the same.

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1           14.    The catalyzer as claimed in claim 1, wherein each plane sheet has a  
2   total length in the flow direction, the total length divided into an even number of  
3   coated sections, each coated section of a coated length, and  
4           wherein each plane sheet has a sequence of alternating coated and uncoated  
5   sections, the coated and uncoated sections on the two successive plane sheets  
6   defining the channel are offset from each other in the flow direction by one coated  
7   length.

1           15.    The catalyzer as claimed in claim 14, wherein the catalytic coating  
2   is disposed as a parallel, continuous band of approximately constant width that  
3   extends in the flow direction, the band arranged across a width of the plane sheet  
4   alternately on a top side and a bottom side of the plane sheet and a cross section of  
5   the plane sheet perpendicular to the flow direction has the band on only one side.

1           16.    The catalyzer as claimed in claim 15, wherein the band of the  
2   catalytic coating is associated with each of the channels.

1           17.    The catalyzer as claimed in claim 14, wherein the catalytic coating  
2   is a row that extends in the flow direction having a plurality of equally sized,  
3   parallel, individual islet-shaped areas, the row arranged across a width of the plane  
4   sheet alternately on a top side and a bottom side of the plane sheet and a cross  
5   section of the plane sheet perpendicular to the flow direction has the row on only  
6   one side.

1           18.    The catalyzer as claimed in claim 17, wherein the row of the islet-  
2   shaped catalytic coating is assigned to each of the channels.

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1           19.    The catalyzer as claimed in claim 1, wherein the catalyzer has a  
2   total length in the flow direction, the total length divided into an even number of  
3   coated sections, each coated section of a coated length, and  
4           wherein each plane sheet extends only over one of the coated sections and  
5   is provided with a catalytic coating and successive plane sheets in the stack are  
6   staggered relative to the coated sections.

1           20.    The catalyzer as claimed in claim 19, wherein the coated section is  
2   a parallel, continuous band of approximately constant width that extends in the  
3   flow direction, the band arranged across the width of the plane sheet alternately on  
4   a top side and a bottom side of the plane sheet and a cross section of the plane  
5   sheet perpendicular to the flow direction has the band on only one side.

1           21.    The catalyzer as claimed in claim 20, wherein the band is associated  
2   with each of the channels.

1           22.    The catalyzer as claimed in claim 19, wherein the coated section is  
2   a row that extends in the flow direction having a plurality of equally sized,  
3   parallel, individual islet-shaped areas, the row arranged across a width of the plane  
4   sheet and alternately on a top side and a bottom side of the plane sheet and a cross  
5   section of the plane sheet perpendicular to the flow direction has the row on only  
6   one side.

1           23.    The catalyzer as claimed in claim 22, wherein the row is associated  
2   with each of the channels.

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1           24.    The catalyzer as claimed in claim 1, wherein the coated section is  
2 provided over a total length of each plane sheet, the coated section having a  
3 plurality of rows, each row extending in the flow direction and having a plurality  
4 of equally sized, parallel, individual islet-shaped areas, and

5           wherein the areas are arranged both within each row and transversely to  
6 each row alternately on the top side and bottom side of the plane sheet and a cross  
7 section of the plane sheet perpendicular to the flow direction has the coating on  
8 only one side.

1           25.    The catalyzer as claimed in claim 24, wherein at least one row is  
2 associated with each of the channels.

1           26.    The catalyzer of claim 1, wherein each of the coated sections of  
2 each corrugated sheet is disposed within a groove of the corrugated sheet.

1           27.    The catalyzer of claim 26, wherein each of the successive  
2 corrugated sheets in the stack are staggered relative to the coated sections.

1           28.    The catalyzer as claimed in claim 26, wherein the coated section is  
2 a parallel, continuous band of approximately constant width that extends in the  
3 flow direction, the band arranged within the groove of the corrugated sheet  
4 alternately on a top side and a bottom side of the corrugated sheet and a cross  
5 section of the corrugated sheet perpendicular to the flow direction has the band on  
6 only one side.

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"sheet" sheet

1           29.    The catalyzer as claimed in claim 26, wherein the coated section is  
2   a row that extends in the flow direction having a plurality of equally sized,  
3   parallel, individual islet-shaped areas, the row arranged within the groove of the  
4   corrugated sheet alternately on a top side and a bottom side of the corrugated sheet  
5   and a cross section of the corrugated sheet perpendicular to the flow direction has  
6   the row on only one side.

1           30.    The catalyzer as claimed in claim 29, wherein each row has a  
2   plurality of equally sized, parallel, individual islet-shaped areas, and  
3           wherein the areas are arranged both within each row and transversely to  
4   each row alternately on the top side and bottom side of the corrugated sheet and a  
5   cross section of the corrugated sheet perpendicular to the flow direction has the  
6   coating on only one side.

1           31.    The catalyzer as claimed in claim 1, wherein the catalyzer is used  
2   for an exothermic reaction having a concomitant, homogeneous gas phase reaction.

1           32.    The catalyzer as claimed in claim 31, wherein the catalyzer is used  
2   in a gas turbine.

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